

**Heather L. Harris**

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## EDUCATION

***Juris Doctor***, Temple University Beasley School of Law, Philadelphia, PA

- Evidence Tainted by Forensic Fraud, a major review article discussing the practice and implications of fraudulent forensic science, produced as independent research under Professor M. Libonati, 2004-2005
- Admitted to the Pennsylvania Bar, October 2006

***Master of Forensic Science***, The George Washington University, Washington D.C.

- Areas of Concentration: Chemistry and Toxicology
- Admitted to the American Board of Criminalistics as a Certificant in Comprehensive Criminalistics and Drug Analysis, August 2008

***Bachelor of Arts in General Studies***, University of North Texas, Denton, TX

- Areas of Concentration: Anthropology, Biology and Chemistry

## PROFESSIONAL EXPERIENCE

***Forensic Chemistry Consultant, October 2006-Present***

- Review and evaluate available case information, including methods of analysis, quality control records, analyst qualifications, law enforcement incident reports, laboratory data and reports, pharmacy records, medical records, environmental monitoring records, laboratory operating procedures, etc.
- Produce expert reports on legal and scientific issues involving evidence in the areas of forensic chemistry and toxicology.
- Provide expert opinions in depositions and courtroom testimony.
- Develop and instruct forensic chemist training program for ANAB/ISO accredited crime laboratory.
- Provide technical advice and review for controlled substance casework and special project work.
- Develop and supervise validation projects for forensic chemistry methods.
- Develop and instruct forensic and toxicology classes for practicing attorneys.
- Produce independent research and studies for conference presentations or publications.

***Assistant Professor, Arcadia University, Forensic Science Department, January 2017-Present***

***Interim Program Director, August 2018-January 2019***

***Adjunct Professor, October 2006-December 2016***

FEPAC Accredited

- Develop and instruct Forensic Chemistry, Advanced Forensic Chemistry, and Forensic Microscopy lecture and lab courses.
- Participate on faculty panel for student oral technical review boards and moot courts.

**DEFENDANT'S  
EXHIBIT**

**1**

**3:22-CR-378-N**

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- Direct and supervise research projects for selected students and prepare final results for publication and/or presentation.
- Manage day-to-day operations of the Forensic Science analytical instrumentation.

***Forensic Chemist, NMS Labs, Criminalistics Section, July 2002-March 2006***

***Forensic Chemistry Consultant, April 2011-December 2018***

ASCLD-LAB Accredited

- Identify and analyze controlled substances and pharmaceutical preparations using chemical, microscopic and instrumental methods of analysis.
- Produce reports and supporting documents concerning evidence analysis, findings and conclusions.
- Provide expert services, such as consultations and case reviews, through both reports and testimony.
- Testify to results of analyses and opinions in local, state and federal courts.
- Monitor quality assurance/quality control activities of section to ensure compliance with authorized policies, procedures and good laboratory practices.
- Develop and instruct forensic chemist training program in compliance with accreditation standards.
- Provide technical advice and review for controlled substance casework and special project work.
- Develop and supervise validation projects for forensic chemistry analytical methods.

***Forensic Scientist, Bexar County Forensic Science Center, Criminal Investigation***

***Laboratory, August 2000-May 2002***

ASCLD-LAB Accredited

- Identify and analyze controlled substances, pharmaceutical preparations, clandestine laboratory materials, and fire debris using chemical, microscopic and instrumental methods of analysis.
- Produce reports and supporting documents concerning evidence analysis, findings and conclusions.
- Testify to results of analyses in local, state and federal courts.
- Assist senior analysts in microscopic hair comparisons, gunshot residue analyses and shooting distance determinations.

***Toxicology Research Assistant, Nichols T. Lappas, PhD., The George Washington***

***University, Department of Forensic Sciences, April 1999-June 2000***

- Conduct literature research in the areas of toxicology and pharmacology.
- Review case files and prepare reports of findings to assist expert witness in preparation for trial.

**INTERNSHIP**

***Dallas Police Department, Physical Evidence Unit, Spring 1998***

- Assist officers in collecting evidence at crime scenes.
- Prepare evidence for transfer to laboratory.
- Enter fingerprint profiles into the Automated Fingerprint Information System.

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**PROFESSIONAL MEMBERSHIPS**

***Advisory Committee for the Evaluation of Controlled Substance Analogs***, Founding Member, 2012-2014

- Structure Subcommittee Chair, 2012-2014

***American Academy of Forensic Sciences***, Member, 2003-present

- Emerging Forensic Scientist Award Reviewer, 2014-2020
- Criminalistics Abstract Review Committee, 2015-2020

***American Board of Criminalistics***, Certificant in Comprehensive Criminalistics and Drug Analysis, 2008-present

***American Chemical Society***, National Affiliate, 2001-2007, 2011-present

- Government Affairs Committee, 2006-2007
- Forensic Chromatography Instructor, 2012-present
  - Solid Drug, Driving Under the Influence of Drugs, and Liquid Chromatography Courses

***AOAC International (formerly the Association of Official Analytical Chemists)***, Member, 2010-present

- Cannabis Analytical Science Program, Cannabis Chemistry Working Group, 2015-present
- Cannabis Expert Review Panel, 2018-present

***Chemical Consultants Network***, Member, 2006-present

***Council of Forensic Science Educators***, Member, 2018-present

***Northeastern Association of Forensic Sciences***, Member, 2005-present

**SELECTED PROFESSIONAL PRESENTATIONS**

***General Acceptance and Scientific Reliability: Does One Ensure the Other?***, NIJ and RTI International Virtual Workshop, Qualifications of an Expert Witness for Legal Professionals, Part II: The Frye Standard, October 2023

***What You Need to Know about Cannabis DUI?***, Pinellas Co ACDL Webinar, May 2023

***PA DUI Law: Recent Developments***, Pennsylvania Bar Institute Webinar, December 2021

***Cocaine Salt v. Base Determinations: The Science You Should Be Using at Sentencing***, NACDL 13<sup>th</sup> Annual Forensic Science Seminar (Virtual), April 2021

***Marijuana or Hemp? Legal and Lab Considerations***, New Jersey Bar Association Webinar, February 2021

***Drug Chemistry for the Defense***, Administrative Office of the U.S. Courts, Defender Services Office Training Division, Multi-Track Federal Criminal Defense Seminar (Denver CO), August 2019

***Field Tests: Controlled Substances and Driver Impairment***, Administrative Office of the U.S. Courts, Defender Services Office Training Division, Winning Strategies Seminar (San Antonio TX), August 2018

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***Fundamentals of Forensic Toxicology***, Administrative Office of the U.S. Courts, Defender Services Office Training Division, Winning Strategies Seminar (San Antonio TX), August 2018

***Controlled Substance Analysis: Anatomy of a Drug Case***, National Forensic College, Innocence Project at Cardozo Law School (New York NY), June 2016 and June 2018

***Examining the Drug Toxicology Report***, PACDL 2018 Defending Drug Crimes Seminar (King of Prussia PA), May 2018

***Ambiguous Field Test Results Lead to Wrongful Arrest***, NEAFS Annual Meeting (Pocono Manor PA), November 2017

***Terpene Identification in Cannabis by Headspace GC-MS***, Perkin Elmer INTour (Chicago IL), September 2017

***Synthetic Drugs and Analogues: Issues for the Defense***, Texas Criminal Defense Lawyers Association, 30<sup>th</sup> Annual Rusty Duncan Advanced Criminal Law Course (San Antonio TX), June 2017

***The Legal and Scientific Landscape of a Federal Analogue Prosecution post-McFadden***, presented with T. Douglas Clifford, Esq. AAFS Annual Meeting (Las Vegas NV), February 2016

***Error Analysis of a Forensic Controlled Substance Case***, NIST International Symposium on Forensic Science Error Management (Crystal City VA), July 2015

***Legal Issues and Analytical Challenges with Emerging Drug Analogs***, presented with J. Graham Rankin, Ph.D., MAAFS Annual Meeting (Roanoke VA), May 2013

***Designer Drugs: Legal and Analytical Challenges for Forensic Laboratories and the Courts***, presented with Barry K. Logan, Ph.D., AAFS Annual Meeting (Washington D.C.), February 2013

***Scientific Method for Controlled Substance Analog Determination***, presented with the subcommittee chairs of the Advisory Committee for the Evaluation of Controlled Substance Analogs, AAFS Annual Meeting (Washington D.C.), February 2013

***Synthetic Designer Drugs: Is It an Analog? How Do You Know?***, NEAFS Annual Meeting (Saratoga Springs NY), November 2012

***Structural Analogs, Novel Compounds and the Federal Analog Act: The Disconnect between Science and the Law***, American Chemical Society Annual Meeting (Philadelphia PA), August 2012

***K2 and Beyond: A Synthetic Cannabinoid Legal Primer***, AAFS Annual Meeting (Chicago IL), February 2011

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***Forensic Investigations: Problems with Contextual Bias***, Villanova University  
School of Law, Matthew J. Ryan Law and Public Policy Forum, January 2011

***Don't Bomb in Court: How Arson and Bomb Scene Investigators and Laboratory Personnel can Survive a Frye or Daubert Hearing***, AAFS Annual Meeting  
(Washington D.C.), February 2008

***The Reliability of a Controlled Substance Field Test Kit as a Basis for Probable Cause (Poster)***, AAFS Annual Meeting (Seattle WA), February 2006

***Proper Techniques for Collection and Submission of Physical Evidence***,  
Montgomery County District Attorney's Municipal Drug Task Force Training  
Seminar, March 2004 and April 2005

#### **SELECTED TRAINING COURSES COMPLETED**

***Deciphering NPS Drugs in Medicolegal Death Investigations***, NMS Labs Webinar,  
October 2023

***Implementation Workshop: TOF/QTOF Mass Spectrometry for Identification, Screening, and Confirmation in Forensic Toxicology and Chemistry***, NIJ and  
RTI International Webinar, October 2023

***So You Think You're Ethical? Ethics and Forensic Science***, The Center for Forensic  
Science Research and Education Webinar Series, October 2023

***Cannabinoid Pharmacology: Three Decades of Controlled Human Cannabinoid Administration Studies***, NIJ and RTI International Webinar, August 2023

***The Intersection of Forensic Toxicology and Forensic Pathology Relating to Emerging Topics in Drug Death Certification***, The Center for Forensic Science Research and  
Education Webinar Series, April to June 2023

***Clandestine Synthesis of Methamphetamine: An Overview***, AAFS and Wiley Webinar,  
February 2023

***Roadside and Laboratory Oral Fluid Drug Testing***, SOFT Webinar, January 2023

***NIST 2022 Forensic Cannabis Workshop***, Forensics @ NIST Conference, November  
2022

***Analytical, Interpretative and Legal Issues Surrounding THC Analogs in DUID Casework***, SOFT Webinar, August 2022

***Agilent 6400 Series QQQ LC/MS Techniques and Operation***, Agilent University, June  
2022

***Standard Guide for Sampling Seized Drugs for Qualitative and Quantitative Analysis***,  
AAFS Webinar, May 2022

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***An Introduction to Scanning Electron Microscopy (SEM) and Associated Energy Dispersive X-ray Spectroscopy***, Pittcon Conference and Expo Short Course, November 2021

***Understanding Drug Sentencing Conference***, The Ohio State University Moritz College of Law, Drug Enforcement and Policy Center, October 2021

***Structural Characterization of Emerging Synthetic Drugs by Mass Spectrometry***, NIJ and RTI International Webinar, March 2021

***Criminal Justice Reform and Forensics: The Importance of Evidence***, University of Pennsylvania Carey Law School, the Quattrone Center and the Houston Forensic Science Center, October 2020

***Cannabis Impaired Driving***, SOFT Annual Meeting (Virtual), September 2020

***Marijuana or Hemp: From Farm Bill to Forensic Analysis***, NIJ and RTI International Webinar, January 2020, March 2020

***SWGDRUG Supplemental Document 6 and Statistical Sampling Calculator Workshop***, NEAFS Annual Meeting (Lancaster PA), November 2019

***A Practical Guide to Analytical Method Development***, LC/GC Magazine and Agilent Technologies Webinar, July 2019

***How to Measure and Reduce Drug Background Levels in Forensic Laboratories and Their Implications on Safety and Data Integrity***, AAFS Annual Meeting (Baltimore MD), February 2019

***Identifying Seized Drugs using MS Library Searching***, NIST Mass Spectrometry Data Center Webinar, August 2018

***Residual Solvents and Terpenes by Gas Chromatography/Mass Spectrometry***, Agilent Technologies Webinar, August 2017

***The Application of Spectral Accuracy to Mass Spectrometry for Enhanced Formula ID and Mixture Analysis***, Don Kuehl, Cerno Bioscience and LC/GC Webinar, June 2017

***NHTSA/IACP Standardized Field Sobriety Testing Practitioner (2015 Curriculum)***, Platt and Associates (Cherry Hill NJ), September 2016

***How to Get More from Your Light and IR Microscopes***, NIJ Impression, Pattern and Trace Evidence Symposium (San Antonio TX), August 2015

***Using Statistics to Determine Sample Size***, Steven Walfish, Statistical Outsourcing Services Webinar, July 2015



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***Enhanced Detection and Confirmation in Forensic Toxicology Screening Using a UHPLC-QTOF System***, LCGC/Bruker Webinar, June 2014

***The Science of DUID***, Axion Analytical Laboratories (Chicago IL), January 2014

***Emerging Trends in Synthetic Drugs Workshop***, NIST Law Enforcement Standards Office in collaboration with DEA (Rockville MD), April 30-May 1, 2013

***Analysis and Interpretation of Chemical Unknowns***, AAFS Annual Meeting (Washington D.C.), February 2013

***Infrared and Raman Microanalysis of Forensic Evidence***, American Chemical Society/Bruker Webinar, Nov 2012

***Mass Measurement Uncertainty for Laboratories***, Rod Gullberg at NMS Labs (Willow Grove PA), October 2012

***Analysis and Interpretation of Mass Spectral Data***, American Chemical Society at Chemspec USA (Philadelphia PA), May 2012

***Synthesis and Chemistry of Synthetic Cannabinoid Compounds***, Iteramed at NMS Labs (Willow Grove PA), November 2011

***Dyes, Fibers and Recent Advances in Textile Chemistry***, NIJ Trace Evidence Symposium (Kansas City MO), August 2011

***Advanced Fire Debris Analysis Interpretation***, NIJ Trace Evidence Symposium (Kansas City MO), August 2011

***Chemical Aspects of Fire Debris***, NEAFS Annual Meeting (Long Branch NJ), November 2009

***Sixth Edition Sentencing Guidelines and Sentencing in Pennsylvania***, Pennsylvania Commission on Sentencing, October 2007

***Clandestine Laboratories***, Montgomery County District Attorney's Municipal Drug Task Force Training Seminar, April 2005

***Agilent GC/MSD ChemStation Data Analysis and Reporting***, Agilent Technologies (Plano TX), September 2003

***Rapid Screening of Drugs for Forensic Toxicology using Retention Time Locking with GC/MS***, Agilent Technologies Webinar, August 2003

***Analytical Tools for the Forensic Scientist***, NEAFS Annual Meeting (Atlantic City NJ), November 2002

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***Methamphetamine: Clandestine Laboratory Investigation and Analytical Approaches***, SWAFS Annual Meeting (San Antonio TX), November 2001

***Forensic Chemist Seminar***, Drug Enforcement Administration Special Testing and Research Laboratory, June 2001

## **PROFESSIONAL MEETINGS ATTENDED**

### ***American Academy of Forensic Sciences Annual Meeting***

- Atlanta 2002
- Chicago 2003
- Seattle 2006, Poster presentation to the Jurisprudence section
- Washington, D.C. 2008, Participated in Jurisprudence workshop
- Chicago 2011, Participated in Toxicology workshop
- Washington, D.C. 2013, Paper presentations to the Jurisprudence and Toxicology sections
- Seattle 2014, Paper presentation to the Jurisprudence section and moderated Drug Chemistry technical paper session
- Las Vegas 2016, Paper presentation to the Jurisprudence section
- Seattle 2018
- Baltimore 2019
- Anaheim 2020
- Virtual Meeting 2021
- Virtual Meeting 2022

### ***American Chemical Society National Meeting***

- Philadelphia Fall 2008, Hosted booth for Chemical Consultants Network
- Philadelphia Summer 2012, Participated on Chemistry and the Law panel discussion
- Philadelphia Summer 2016

### ***Eastern Analytical Symposium and Exposition***

- Plainsboro NJ 2021
- Plainsboro NJ 2023

### ***Forensics @ NIST Conference***

- Virtual Meeting 2020
- Virtual Meeting 2022

### ***Mid-Atlantic Association of Forensic Scientists***

- Ellicott City MD 2012
- Roanoke VA 2013, Participated in Drug Chemistry workshop

### ***National Institute of Justice Biannual Trace Evidence Symposium***

- Kansas City 2011
- San Antonio 2015, Poster presentation
- Arlington VA 2018



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***NIST International Symposium on Forensic Science Error Management***

- Crystal City VA 2015, Paper presentation on Criminalistics track

***Northeastern Association of Forensic Scientists Annual Meeting***

- Atlantic City 2002
- Long Branch NJ 2009
- Saratoga Springs NY 2012, Paper presentation in Drug Chemistry Session
- Pocono Manor PA 2017, Paper presentation in Drug Chemistry Session
- Lancaster PA 2019
- Virtual Meeting 2020
- Mystic CT 2023

***Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon)***

- Philadelphia 2019
- Philadelphia 2023

***Society of Forensic Toxicologists Annual Meeting***

- Virtual Meeting 2020

***Southwestern Association of Forensic Scientists Annual Meeting***

- San Antonio 2001, Moderated technical paper session

**PUBLICATIONS**

***AOAC SMPR® 2023.001 Standard Method Performance Requirements (SMPRs) for Determination of Pesticides in Cannabis-Containing Beverages***, In press, Journal of AOAC International.

***AOAC SMPR® 2019.003 Standard Method Performance Requirements (SMPRs) for Quantitation of Cannabinoids in Plant Materials of Hemp (Low THC Varieties Cannabis sp.)***, In press, Journal of AOAC International.

***AOAC SMPR® 2017.001 Standard Method Performance Requirements (SMPRs) for Quantitation of Cannabinoids in Cannabis Concentrates***, Audino, et al: Journal of AOAC International, Vol. 100, No. 4, 2017

***AOAC SMPR® 2017.002 Standard Method Performance Requirements (SMPRs) for Quantitation of Cannabinoids in Dried Plant Materials***, Audino, et al: Journal of AOAC International, Vol. 100, No. 4, 2017

***The Fundamentals of Uncertainty of Measurement, Understanding DUI Scientific Evidence***, J. McShane and J. Lee, Eds., Thomson Reuters/Aspatore, 2015

***The Fundamentals of Calibration, Understanding DUI Scientific Evidence***, J. McShane and J. Lee, Eds., Thomson Reuters/Aspatore, 2014.

***Brief of Expert Forensic Scientists as Amici Curiae in Support of Petitioner***, Stephen Dominick McFadden v. United States of America, 576 U.S. 186 (2015).